

Headquarters Pacific Air Forces

Integrity - Service - Excellence

Remedial Process Optimization Implementation at PACAF



Presented by

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Overview

- **Why Remedial Process Optimization (RPO) at PACAF?**
- **Lessons Learned**
- **Conclusions**





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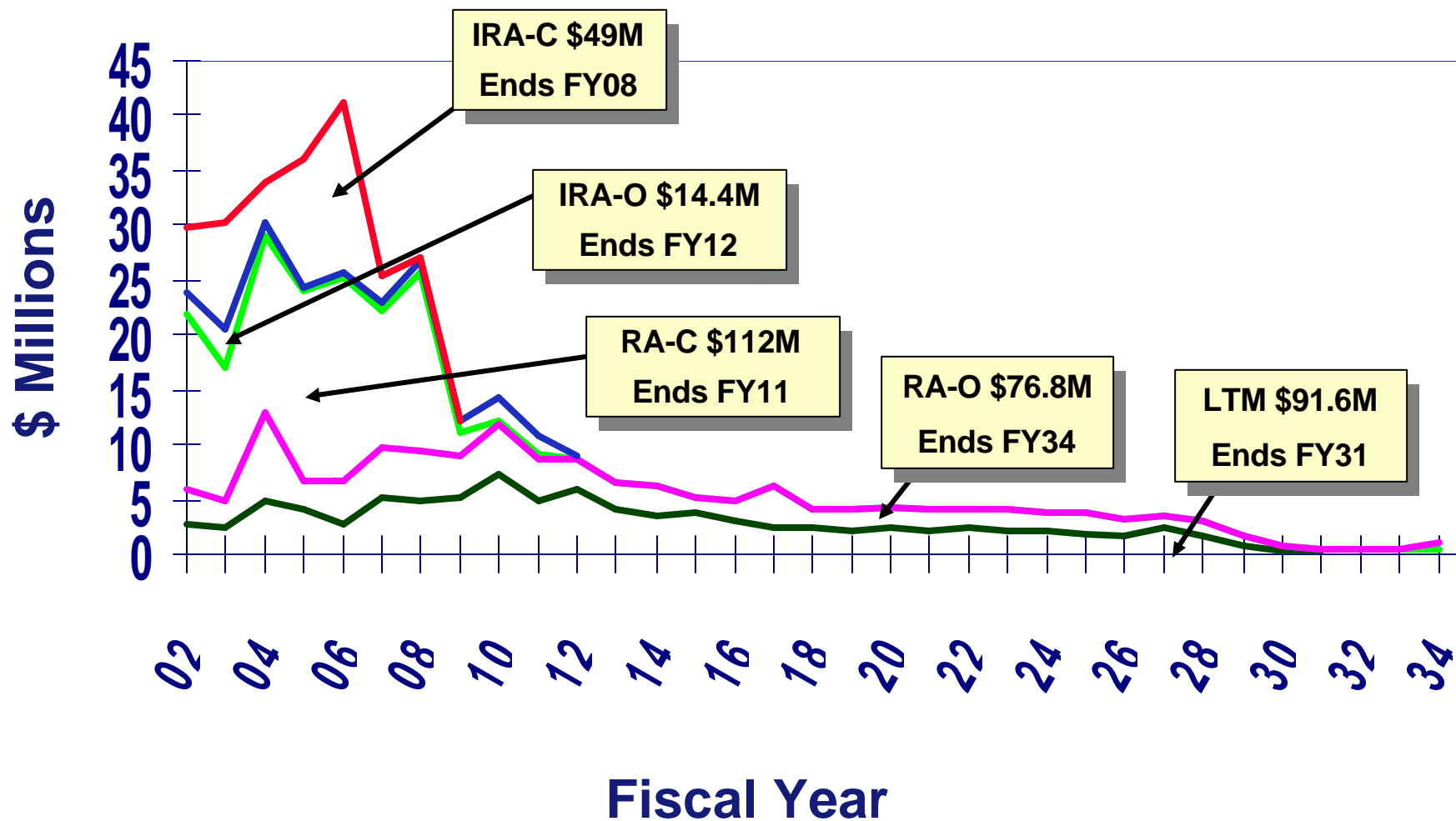
Why RPO at PACAF?

- **Significant cost savings potential**
 - Many PACAF bioventing and nat. attenuation sites
 - RPM focus: program management vice technical
 - Long term monitoring (\$91M) + remedy operation costs (\$77M) = savings opportunity
- **Peer review experiences**
 - Limited *pre decision* quality check
 - Good PACAF success
 - Significant savings and quality improvement
 - RPMs have solicited voluntary reviews
- **RPO provides**
 - Extensive *post decision* quality check w/efficacy data
 - Opportunity for enhanced consultation



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PACAF ERA Cleanup Costs to Completion





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PACAF RPO Implementation

- **FY99 PACAF invited AFCEE RPO training**
 - **Offered to all base RPMs MAJCOM-wide**
 - **Exposed concept to most RPMs**
 - **Sparked interest at Eielson AFB**
- **Eielson AFB initiated RPO support**
 - **Optimize long-term monitoring program**
- **FY01 PACAF offered RPO as peer review waiver alternative**
- **FY03 All PACAF bases have requested RPOs**



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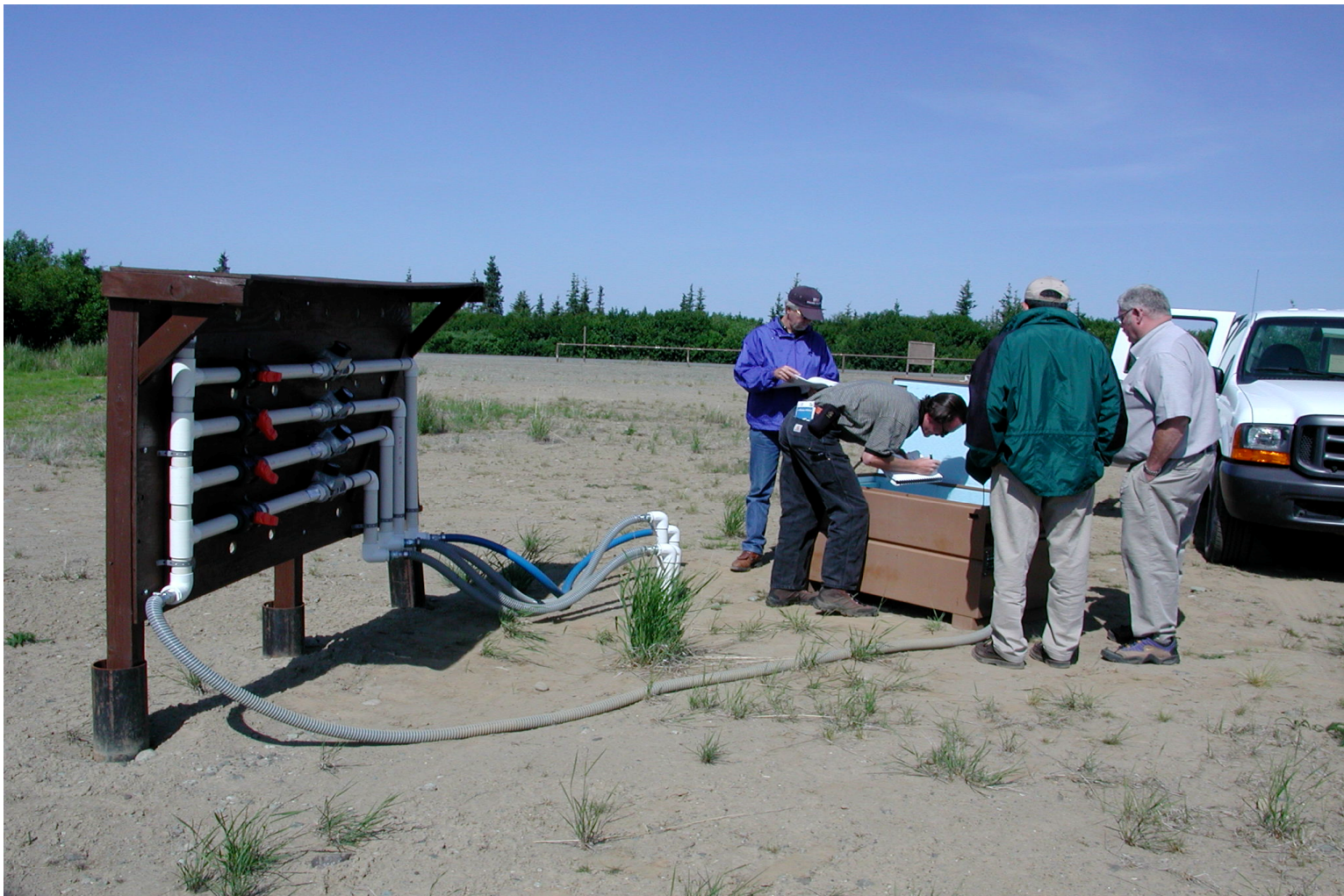
PACAF RPO Implementation Success

- **Base RPMs have identified RPO as:**
 - **Technical support and consultation that provides new experiences, options and solutions**
 - **Not an audit or inspection imposed by the MAJCOM**
 - **Comprehensive assessment of restoration projects**
 - **Opportunity to cross-feed and learn how to improve program management**
- **HQ PACAF support and promote RPO assessments**



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Lessons Learned





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PACAF RPO

Opportunities and Lessons Learned

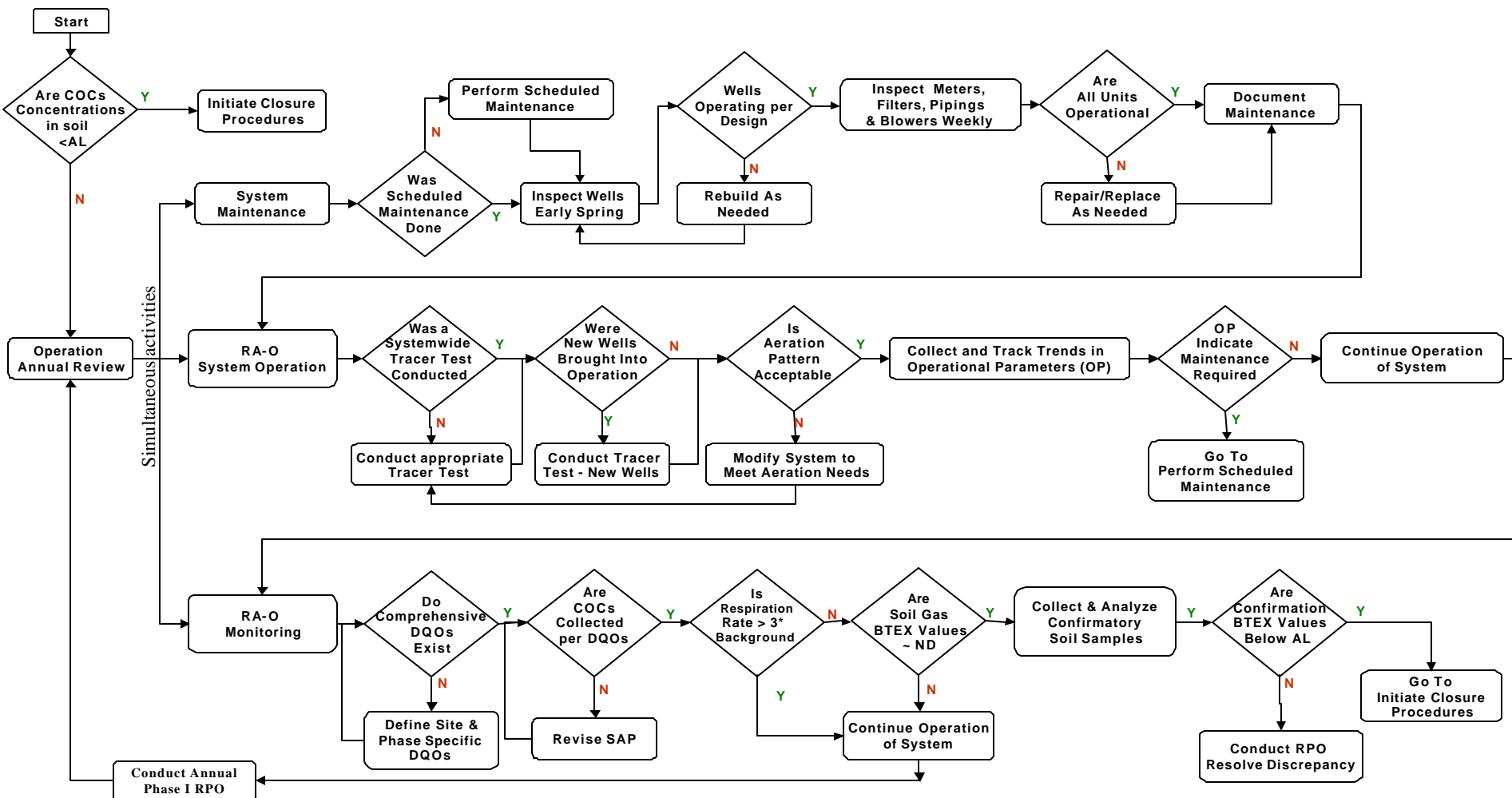
- **Programs require explicit decision rules:**
 - **Conditions which trigger an alternate remedy or optimization of present cleanup technology**
 - **Monitoring well management and decommissioning**
 - **Remedial system operation and maintenance**
 - **Sampling frequency, sampling locations, and analytes/parameters**
 - **Ultimate close out/exit strategy**



Example of Decision Tree Developed in an RPO Scoping Visit

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King Salmon Airport Bioventing Systems Operation and Site-Closure Decision Tree





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PACAF RPO

Opportunities and Lessons Learned

- Remedial systems require more maintenance and efficacy evaluation
 - Maintenance failure = remedy failure
 - Major Alaska POL remedy challenge
 - Same tech fixes often needed at different sites
 - Evaluate remedy effectiveness
 - Site may already be “clean”
 - Remedy may not be effective any more
 - May need to refocus on “stubborn” parts of a site
- Cleanup goals may need to be updated
 - Early RODs may have been too conservative
 - Regulators are now more sophisticated and flexible
 - Impracticabilities may now be apparent



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Eielson AFB RPO Experience

- **1999 Long-Term Monitoring Plan Optimized Sampling Frequency**
 - Remaining risk protective
 - Meeting project data quality objectives
 - Reducing annual sampling cost by \$196K

- **2001 RPO Phase I & II Assessment**
 - Provided supporting data to close three soil sites
 - Eliminating the need to rebuild and operate Vapor Extraction System
 - Site E 7 & ST 48 = \$ 860K
 - Site E 9 = \$ 375K



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Ongoing PACAF RPO Experience

■ King Salmon RPO

- Phase 1 completed Jun 01
- Estimated first year cost avoidance: \$145K
 - Savings would continue for out years
- Phase 2 recommended

■ Elmendorf RPO

- Phase 1 completed Jul 01
- 13 bioventing wells, 1 bioventing system, 1 HVE system
- Estimated total cost avoidance: \$750K
- Elmendorf considering internal RPO phase 2



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Conclusions

- **RPMs are restoration generalists**
- **Remedy operation and long term monitoring optimization is:**
 - **Specialized**
 - **Relatively new business**
 - **Designed to end the program earlier**
- **Train all RPMs on RPO concept**
 - **Management of monitoring and remedial systems is becoming the “bread and butter” of our business**
 - **RPO = technical cross-feed**



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Conclusions

- **Seek out appropriate installation for first RPO**
 - **Multiple sites in remedial action-operation and long term management phases**
 - **Progressive, open-minded RPM**
 - **Reasonable regulatory over site**
- **RPM referral is the best form of promotion**
- **MAJCOM participation and support**
 - **Promote through peer review waiver option**
 - **RPO team participation-lessons applied to validation**
 - **Assist AFCEE w/gaining support for less desirable recommendation**



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Conclusions

- **Take long term view on implementation**
 - **RPM acceptance needs to be continually worked**
 - **Phased approach, cumulative savings**
- **Monitor follow-through of RPO recommendations**
 - **Validation process**
 - **Calculate return on investment**
- **Positive PACAF RPO experience**
 - **Doing the job smarter + faster = \$ savings**
 - **Improves technical knowledge of RPM**
 - **Knowledge can be broadly applied**
- **10% cumulative savings = \$17M + early closure**
 - **20% savings easily conceivable**